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P. Rosenkranz

Results from the last software exercise

All of the following figures have been derived for granule 401, which is a concatenation of the first scan from each of the 240 simulated granules. In the first run of retrievals in January, the microwave temperature profiles had large mean errors, as seen in Figure 1. It was determined that the cause was initialization of the profile, prior to the retrieval, with the US Standard Atmosphere. In the second run on February 12, the profile was initialized with the UARS climatology, and mean errors were reduced, as shown in Figure 2. However, the climatological initialization still differs by up to 20K from the true profile, as shown in the cross-section through the nadir position in Figure 3. The periodic variation in this figure corresponds to the simulated orbit of the earth. This can be compared to the mean retrieval errors shown in Figure 4 (in this figure the profiles are averaged over the 30 scan positions). This suggests that there may be a potential for improvement with a more accurate climatology.

Figures 5 and 6 are scatter plots of retrieved surface skin temperature and total cloud liquid water versus the true values. The rms error in T_s is $\sim 4K$, with the largest errors occurring in the underestimate direction in relatively warm regions, but not over the very hot surfaces. Figure 6 shows a small number of points where clouds were present but not detected (i.e., the retrieval is zero), and four points with anomalously high retrieved values. It remains to be determined whether the liquid-water outlier points have a disproportionate impact on statistics of other retrieved parameters.

Fig. 1

US Standard a priori

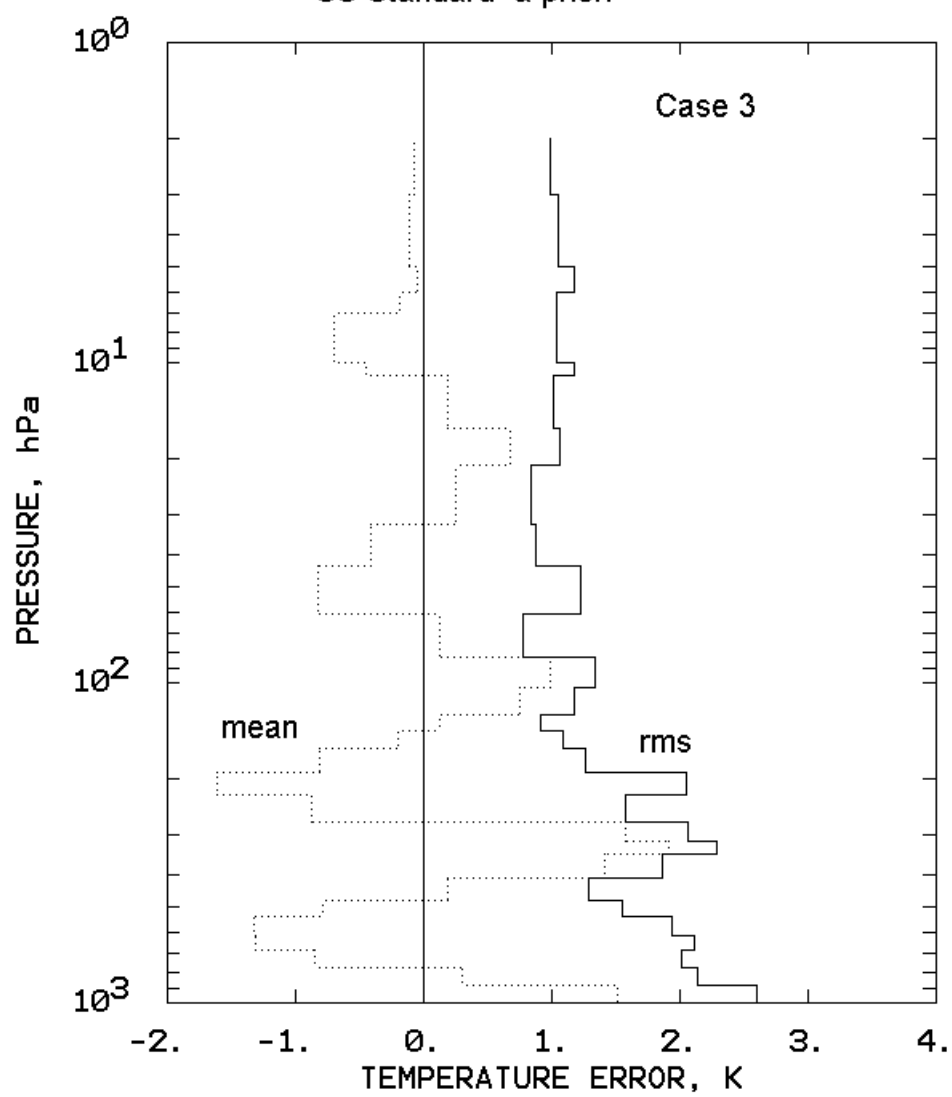


Fig.2

Climatology a priori

2/12/01

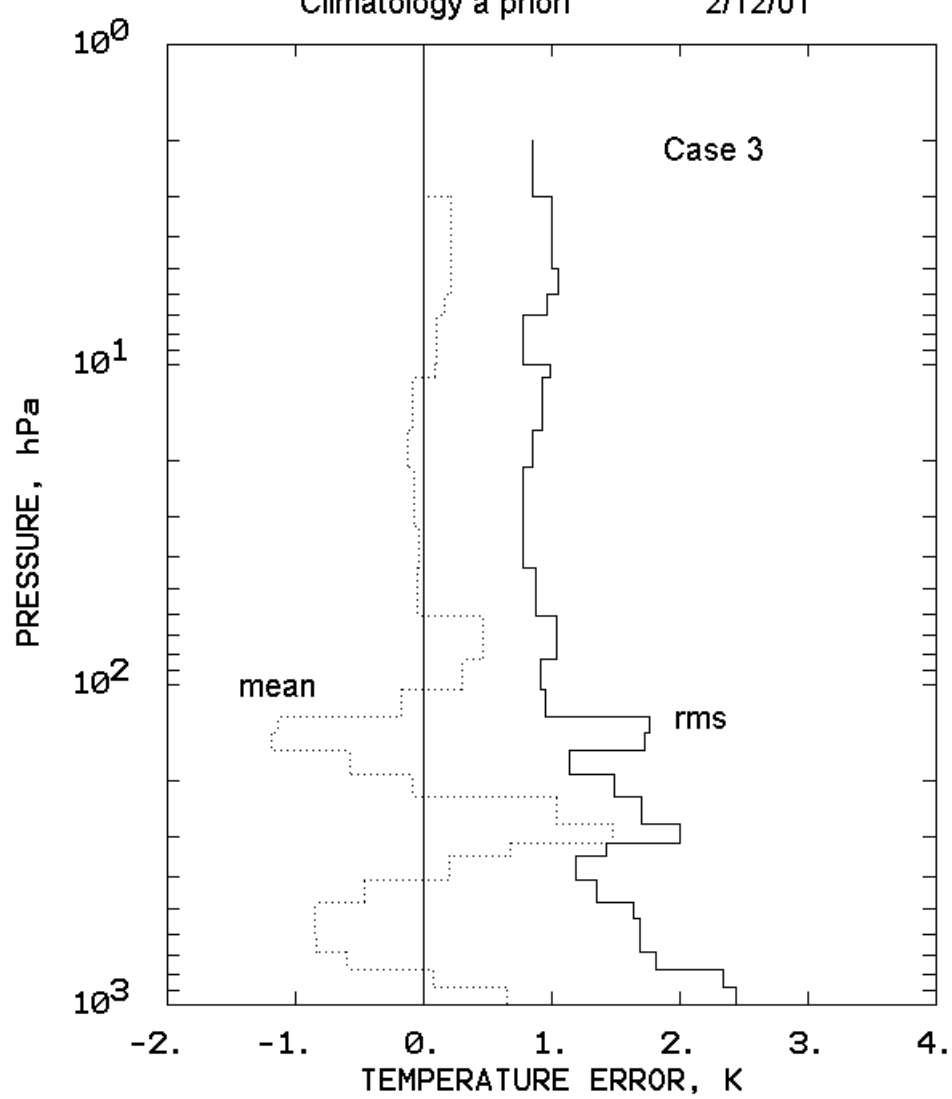


Fig. 3

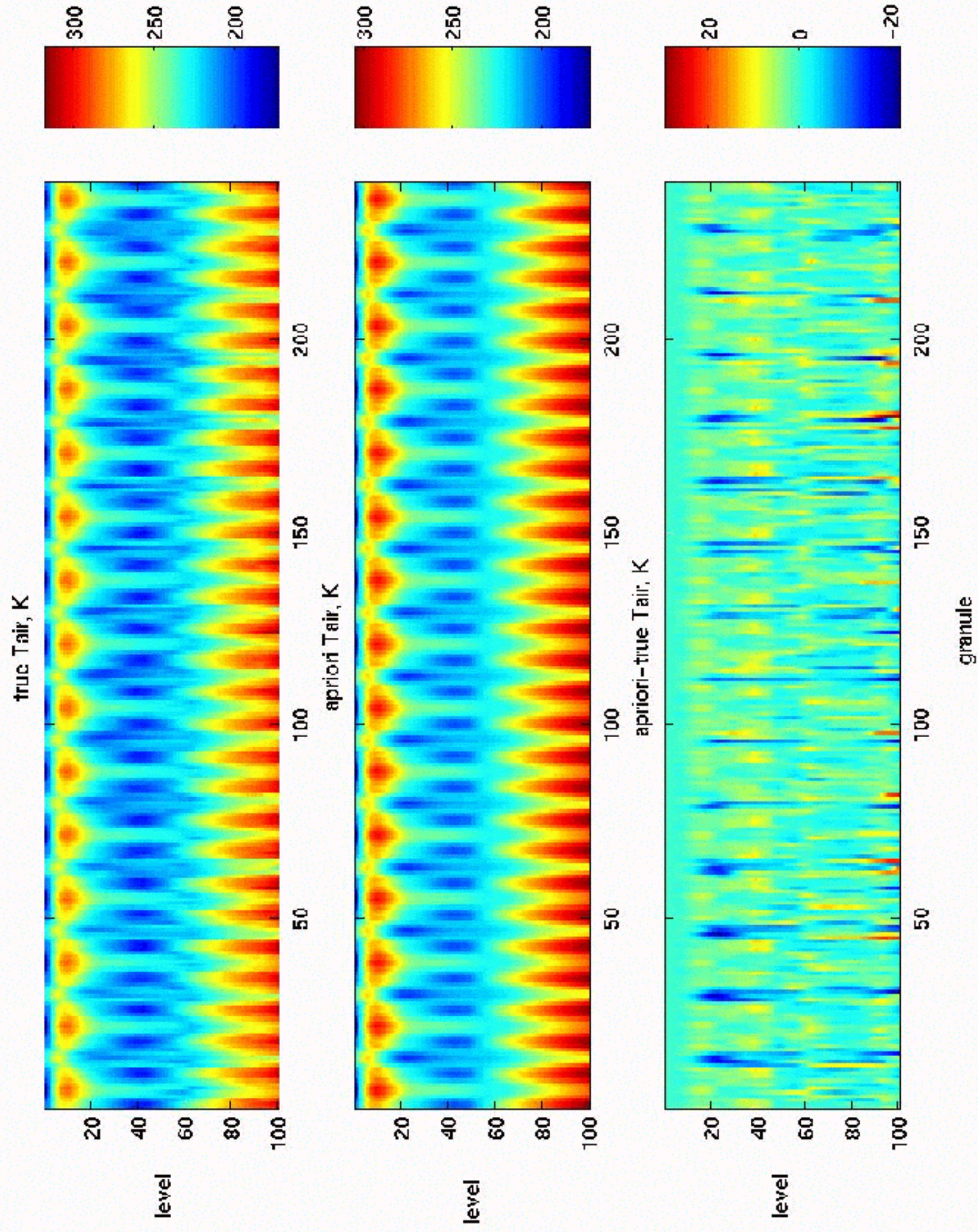
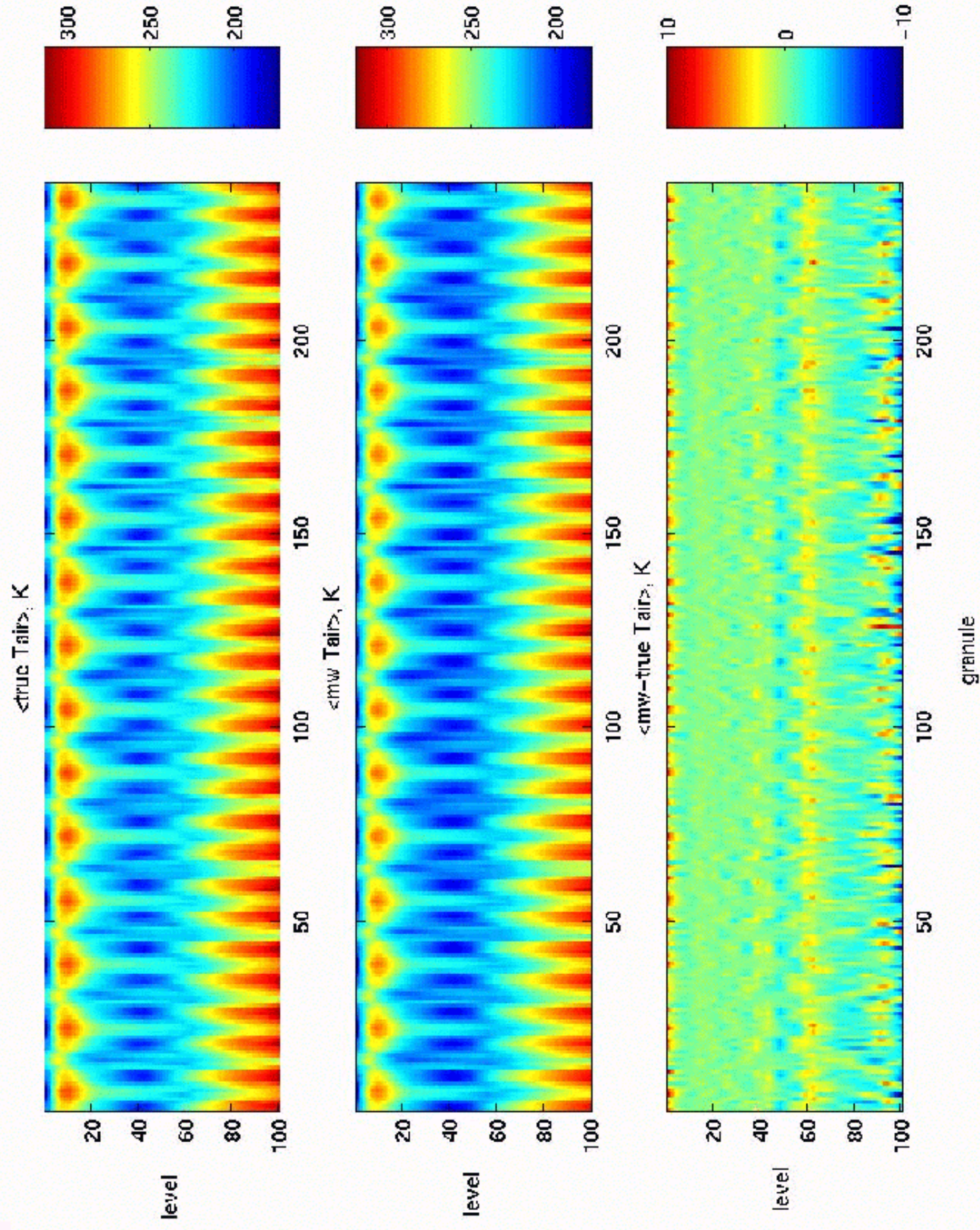
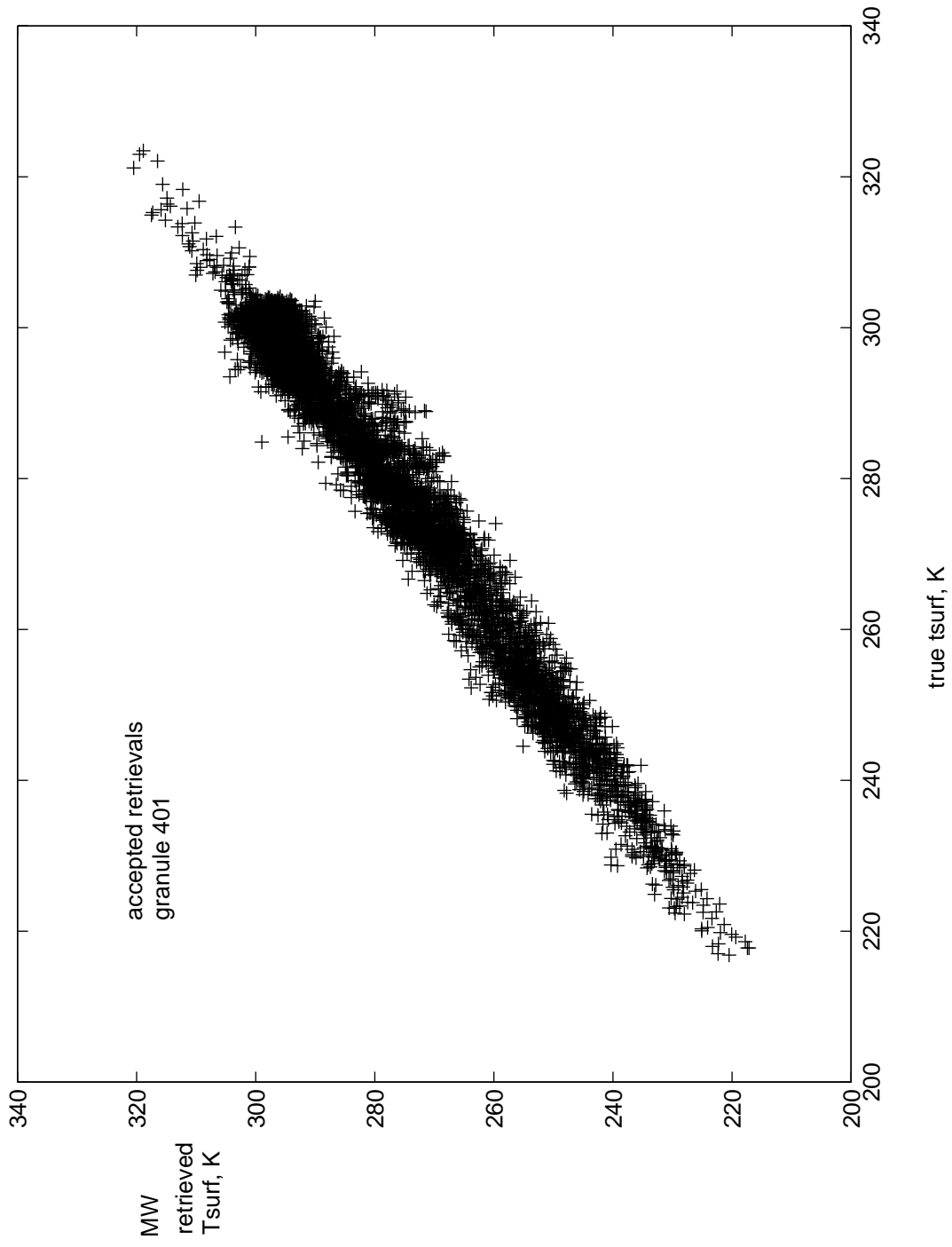


Fig. 4





retrieved
cloud liquid, mm

